

# Information Sheet

## 8. PESTS

### 8.3 Sap feeders

#### APHIDS

**S**everal aphid species have been recorded in sugarcane, and their feeding may cause some physical damage. They are sap feeders and when feeding they excrete a sweet substance called honeydew, on which an unsightly black fungus (*Capnodium* sp) may form. Two species are of particular importance because they are the main vectors of mosaic disease in sugarcane. The species that spread mosaic do not form large colonies on sugarcane; they are transitory feeders.

#### Sugarcane aphid (*Melanaphis sacchari*)

##### Identification

Sugarcane aphids are pale-coloured insects with small, soft bodies about 2 mm long. They have two small tubes resembling horns on their backs. The young are wingless and some individuals remain so throughout life.

Others, which increase in numbers as winter approaches, develop two pairs of membranous wings in the adult stage (Figure 1).

##### Biology

Neither males nor eggs are found; the females produce young without mating. The winged form serves to spread the infestation.

##### Damage

In a severe outbreak, the sooty mould associated with the aphid may block the leaf stomata, thereby checking growth. However, as soon as the aphids disap-

pear, clean new leaves are formed and the problem is resolved. This species does not transmit mosaic.

##### Control

Aphid populations are kept in check by such natural enemies as maggots of syrphid flies, minute parasitic wasps and four to five species of ladybird beetles (Coccinellidae). No control measures are recommended.

#### Maize leaf aphid (*Rhopalosiphum maidis*)

##### Identification

These are winged or wingless aphids which have a life history similar to that of *Melanaphis sacchari*. They are distinguished from the latter by their larger size, their dark green colour and the dark areas around the base of the abdominal horns (Figure 1).

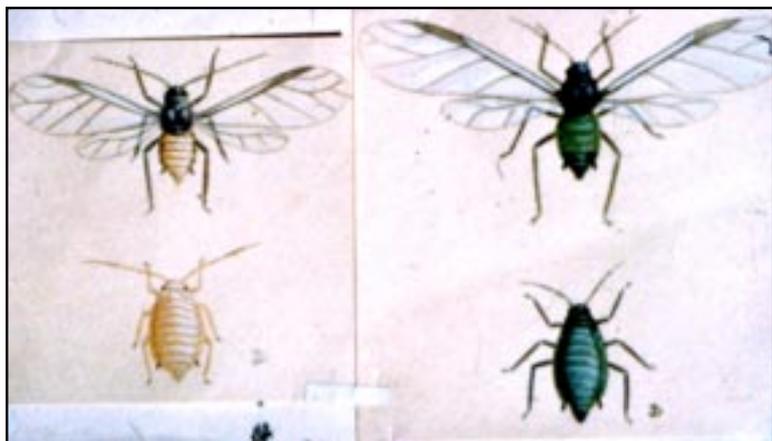


Figure 1. Adult (winged) and young stages of sugarcane aphids *Melanaphis sacchari* (left) and *Rhopalosiphum maidis* (right).

### **Biology**

Best known as a pest of maize, these aphids are also found on sorghum and on a number of wild grasses. They do not thrive on sugarcane and will survive on it for only a few days. The life cycle is about eight days, and reproduction is mostly parthenogenetic.

### **Damage**

Physical damage to sugarcane is minor. However, they are important as a vector of mosaic disease (see *Hysteroneura*).

### **Control**

Like *M. sacchari*, they are controlled by parasites and predators. Do not plant maize, the principal host plant for this pest and a source of mosaic, in close proximity to cane fields.

## **Hysteroneura (*Hysteroneura setariae*)**

### **Identification**

This aphid has a brown body with yellow and brown striped legs.

### **Biology**

Females live for about 22 days, producing offspring at a rate of one to five per day, and numbers can increase dramatically. Peak populations occur during mid-summer (around January).

### **Damage**

This aphid is the most frequently occurring vector of SCMV on sugarcane in South Africa. Mosaic spreads most rapidly when young cane (up to about 12 weeks after planting) coincides with the period of peak vector activity in late summer.

### **Control**

Natural control occurs, and the injudicious use of insecticides would adversely affect this control. Where mosaic is a problem, avoiding planting cane in late summer can help reduce the spread of mosaic.

## **Numicia – ‘green leaf sucker’ (*Numicia viridis*)**

### **Identification**

These are small, inconspicuous insects which are native to South Africa. The adults are about 7 mm long, bright green in colour and have rather flat wings.

They move by hopping or in short, jerky flights. *Numicia* is a pest mainly in inland, irrigated cane (Figure 2).

### **Biology**

The females lay their eggs in a row of punctures in the midrib on the lower side of the cane leaf. The nymphs are paler in colour than the adult, but both feed by sucking sap from the leaves.

### **Damage**

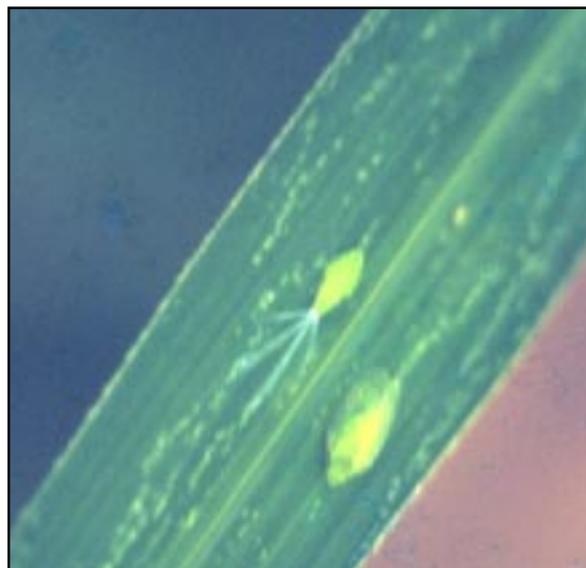
There is evidence that, when feeding, this insect poisons the plant. The first symptom is a weakening of the leaf tissue, followed by buckling and drooping of the leaves. Later, the leaves become a blotchy yellow colour and often die at the tips and along the edges. The growing point of the stalk may be affected and the top of the stick becomes flabby.

Cane is most prone to attack in irrigated areas, where rainfall is low and the cane forms a lush oasis to which *Numicia* can migrate from native grasses. It is sometimes kept in check by predators and parasites, but a very severe outbreak can cause considerable losses in crop yield and a noticeable reduction in sucrose content.

### **Control**

Burn and harvest mature cane. Insecticides should be used only in extreme cases (consult SASEX before use) and should be applied when the first adults appear and again two to three weeks later. Suitable insecticides are:

**Endosulfan** (Thiodan) as a 5% dust at 28 kg/ha, or as a low volume solution at 5.5 litres/ha.



**Figure 2. Adult and nymph of the green leaf sucker, *Numicia viridis*.**



**Malathion** as a 5% dust at 45 kg/ha, or as an ultra-low volume spray containing 1.0 litre/ha.

Two minute wasps that parasitise the eggs of *Numicia* have been identified, and there is evidence that the control they exercise has increased since the insect first became a pest in sugarcane.

## Plant hopper *Perkinsiella saccharicida*

This insect is indigenous to the Australasian regions, from which it has been introduced to many parts of the world, including South Africa, Mauritius and Madagascar.

### Identification

*Perkinsiella* is found throughout the cane belt. Adults are about 7 mm long, slender with discontinuous brown to black markings. Nymphs are smaller, thicker bodied and wingless (Figure 3).

### Biology

Females may live up to two months and lay about 300 eggs. Eggs are inserted in the upper surface of leaf midribs near the junction between the leaf blade and the sheath. This causes conspicuous red blotches on the leaf. Eggs may occasionally be inserted in stem tissue and may cause distortion of the stem. The incubation period is about 14 days. After hatching, the nymphs gather near the bases of leaves. Each of the five nymphal stages lasts between four and nine days.

Both adults and nymphs are sap feeders. Adults are more active and can disperse by short flights from plant to plant. Often, when disturbed, the adults do not fly

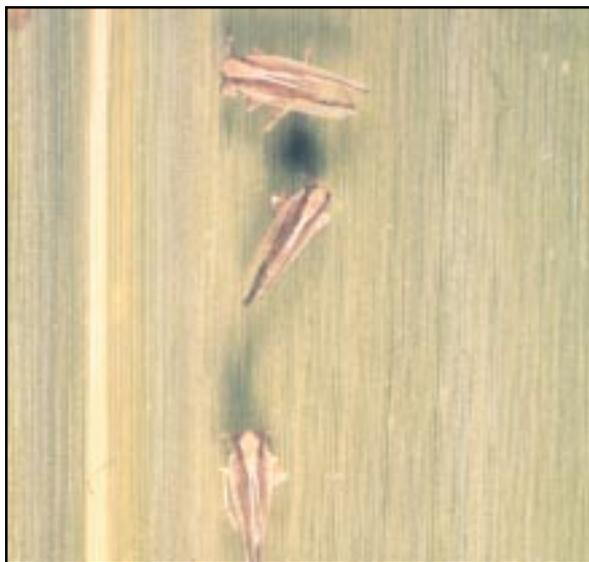


Figure 3. The plant hopper, *Perkinsiella saccharicida*.

but move in a crab-like manner and hide behind a leaf or stem.

### Damage

As mentioned, red blotches can occur where eggs are laid, but this damage is of little consequence. This insect is, however, a vector of the viral disease known as Fiji disease and as such is a potentially serious pest. Fortunately, through efficient quarantine procedures, this disease is not present in our industry.

### Control

Natural control by predators and parasites is adequate. There is so far no need to consider other approaches to control of this minor pest.

## SUGARCANE MEALYBUGS

### *Saccharicoccus sacchari* and *Dysmicoccus boninsis*

Both these species occur in our sugarcane, but the former is the more common. They can be found in virtually any cane field, and tend to become more abundant when the cane is under stress, e.g. from ratoon stunting disease.

Mealybugs are less important as pests today than they once were. This is due to improvements in the methods of handling material, which have ensured that cane setts no longer act as a source of infestation.

### Identification

Mealybugs are soft-bodied, egg shaped, pink insects, up to 5 mm long. They are found in clusters between the leaf sheath and the stalk, where they suck juice from the joints (Figure 4).

### Biology

Males are rare and the females can produce fertile eggs without mating. The eggs hatch within an hour of being laid and the fairly active nymphs migrate upwards towards the young joints of the stalk. As they grow bigger, they become less active, because their legs do not develop in proportion to their bodies. Thus adults are almost sedentary.

### Damage

Mealybugs stunt the growth of cane and there is some evidence that a substance produced by them, or by the bacteria and yeasts associated with them, is toxic to the plant. They are spread to new plants by ants, which look after them for the sake of the honeydew they excrete.



## Control

Natural enemies include a disease caused by a fungus, apparently a species of *Aspergillus*; small parasitic wasps of the family Encyrtidae; the predacious caterpillars of a tineid moth; and the maggots of a fly related to the vinegar flies (*Drosophilidae*).

Applied control includes removing trash from setts, followed by routine treatment of setts with insecticide before planting, as described for the control of Eldana (Information Sheet 8.6).

## Soft scale (*Pulvinaria saccharia*)

### Identification

Soft scale look like small, yellow, oval bodies on the underside of green sugarcane leaves. Associated with this insect is a fungus (sooty mould, *Capnodium* sp) that blackens the green leaves (Figure 5).

### Biology

The adult scale does not move around, and dispersal is by the young first stage nymph. Dispersal is by crawling from one leaf to another or, more effectively, being blown by wind. The female attaches herself to the underside of leaves and feeds on the phloem sap.



Figure 4. The mealybug *Saccharicoccus sacchari* on sugarcane.

The duration of the life cycle for this species is not known, but for the closely related species, *P. iceryi*, it is between 35 and 60 days under tropical glasshouse conditions.

### Damage

There are two aspects of damage to sugarcane, the first being the physical removal of sap from the plant. With large numbers of scale feeding, symptoms resemble drought stress as water and nutrients are removed from the plant.

The second aspect of damage is the effect of the sooty mould fungus. This develops on the honeydew produced by the scale and can cover the entire leaf. This reduces the photosynthetic ability of the leaf, consequently influencing plant development.

### Control

Natural biological control has been effective for many years. It is thought that local outbreaks have been caused by a breakdown in this natural control, which may re-assert itself in due course. At this stage no recommendation for the use of insecticides has been formulated.



Figure 5. Magnified image of sugarcane leaf showing soft scale (oval structures).

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